Application No 10/670,272
Amendment dated February 2, 2005
Reply to Office Action dated November 2, 2004

Remarks/Arguments

Claims 1 - 27 remain pending in the application.

The Examiner rejected claims 1 - 4, 11 - 14 and 21 - 27 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,436,299 to Baarman et al., hereinafter referred to as Baarman, in view of U.S. Patent No. 5,144,146 to Wekhof. The Examiner rejected claims 5, 7, 15 and 17 under U.S.C. 103(a) as being unpatentable over Baarman in view of Wekhof, and in further view of U.S. Patent No. 6,317,051 to Cohen. The Examiner rejected claims 6, 8-10, 16 and 18-20 under U.S.C. 103(a) as being unpatentable over Baarman in view of Wekhof and Cohen, and in further view of general skill in the art. For the reasons set out below, Applicant respectfully traverses the rejections under 35 U.S.C. 103(a).

The present invention is directed to a fluid treatment system for small enterprise and consumer use, the system having a sensor unit for the fluid treatment system and an intelligent driver for a UV emitter of the system. As recited in each of independent claims 1, 13 and 21 the sensor unit and UV emitter are disposed within the fluid treatment zone. Applicant submits that the claims of the present application require both a UV emitter and a sensor unit inside the fluid treatment zone where the fluid flows. As will be appreciated by the Examiner, the location of the UV emitter and sensor unit within the fluid treatment zone permits more effective irradiation and direct sensing as contrasted to systems that isolate the irradiation and sensing units outside the fluid flow.

The Examiner construed Baarman to be a fluid treatment system comprising, *inter alia*, "a sensor unit disposed within the fluid treatment zone as recited in Col.2, ll 59-65." Applicant respectfully disagrees Col. 2, lines 59-65 reads:

> "the preferred embodiment, the control unit is also electrically connected with a flow sensor, an ambient temperature sensor circuit, an ambient light sensor circuit, an ultraviolet light sensor circuit, a power detection circuit, a display, an audio generation circuit, a memory storage device, a communications port and a radio frequency identification system. These devices are all monitored or controlled by the"

Nowhere in this excerpt is the location of any of the flow sensor, temperature sensor, ambient and UV light sensors and power detection sensor said to be within the fluid treatment zone.

Baarman discloses a UV emitter and a sensor unit that are both remote from the fluid treatment zone. As described at col. 15, line 64 to col. 16, line 2 and as shown in Fig. 2B, the fluid treatment zone is defined by a pair of quartz tubes 58 where the water flows and is irradiated by the ultraviolet lamp 60, which is clearly located outside the quartz tubes. With respect to sensors, there is nothing in Baarman to suggest that the electronics assembly 44, which is assumed to contain the necessary sensors, is located within the fluid treatment zone, nor that the sensors are disposed elsewhere within the overall system. In fact, the electronics assembly, which is described in greater detail throughout the remainder of the specification, is described at col. 6, lines 18 - 23, as being fit securely to the bottom shroud 18 into which, it must be presumed, the base of the ultraviolet lamp is received. Additionally, flow sensor circuit 104, shown in Fig. 9 is disclosed as having as a flow sensor 440, which is further described as an Allegro sensor model 3134 (col. 18, line 35). The Allegro 3134 is a Hall-effect sensor which is a device related to magnetic field sensing. We have attached a technical data sheet on the Allegro 3134 sensor. The flow sensor being a Hall-effect sensor, we have to assume that a flow inside the water treatment zone somehow generates or modifies a magnetic field, which field or field variation is detected by the Allegro sensor 440. Baarman does not teach how this presumed magnetic field is generated or modified or where the Allegro sensor is located. Applicant submits that a worker skilled in the art would locate the sensor close to the other electronics shown in Fig. 9, and outside of the water treatment zone.

Regarding Wekhof, the Examiner cited Wekhof as disclosing a UV light source within a fluid chamber. Wekhof teaches a method and an apparatus for destruction of toxic compounds through direct ultraviolet irradiation, the apparatus comprising a water flow chamber within which is disposed a pulsed UV light source such as a xenon flash lamp (col. 4, lines 50-54). Wekhof's disclosure is directed to a municipal waste water purification system (column 2, lines 48-50), not to a small enterprise or consumer use system.

Applicant submits that Baarman and Wekhof, when combined, do not lead to the present invention since Baarman teaches neither a UV light source disposed within a fluid chamber nor a sensor disposed within the fluid chamber. Combining Wekhof to Baarman would lead to a water treatment apparatus still without a sensor in the fluid chamber. Applicant further submits that it is improper to combine a reference directed to personal or small enterprise water purification, in this case Baarman, with a reference directed to industrial or city-type water purification such as the waste water purification of Wekhof. Baarman and Wehkof are not in the same field and should not be combined. Additionally, Applicant submits that the pulsed UV-lamp disclosed in Wekhof also makes the combination of Baarman and Wekhof improper. Pulsed UV systems have been known for a considerable time; however, there are still no commercially available units for consumer or small enterprise use. High voltages, high current densities and rapid current rises (Wekhof columns 4 and 5) required in pulsed UV systems are expensive to implement safely, pushing the cost out of reach of the consumer and small enterprise users. Moreover, pulsed UV-lamps are generally positive pressure lamps, which means that they require special and expensive transparent envelops, sometimes made of sapphire, to reduce the risk of lamp explosion. Even if the combination of Baarman and Wekhof led to a water purification apparatus having a sensor and a UV light source disposed within a fluid chamber, it would not be the water purification apparatus of the present invention, i.e. a water purification apparatus with a non-pulsed UV light source.

Therefore, Applicant submits neither Baarman nor Wekhof describe or suggest disposing a sensor unit within a fluid treatment zone as recited in independent claims 1, 13 and 21. Applicant further submits that the combination of Baarman and Wekhof would not lead one of skill in the art to the invention claimed in claims 1-4, 11-14 and 21-27. Withdrawal of the rejections under 35 U.S.C. 103(a) to independent claims 1, 13 and 21, and their dependent claims 2 - 4, 11, 12, 14 and 22-27, is therefore, requested.

The Examiner cited Cohen as disclosing a sound/vibration detector connected to a control system. Cohen discloses a microphone for detecting leaks in high pressure water pipes. When a leak is detected, the system can take appropriate action to stop the water flow. Applicant first submits that Cohen is not within the art of water treatment systems, and is, therefore, not a

proper reference to combine with Baarman and Wekhof. Applicant reiterates the comments above and further notes that there is no teaching, suggestion or demonstrated incentive in either reference supporting the combination of a system for UV water treatment with leak detection in high pressure municipal water delivery systems.

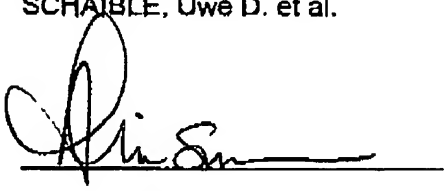
The Examiner states, in the last paragraph of page 5 of the Office Action, that the addition of a sound/vibration means for diagnosing proper operation would be obvious to one of ordinary skill in the art. Applicant respectfully submits that such sound/vibration generation means is not obvious, as evidenced by the fact that it is not taught or suggested in any of the cited references. Further, the present invention brings this sophisticated technology to a cost level affordable for consumer and small enterprise applications. Applicant further submits that Cohen does not disclose a sound/vibration sensor disposed within a fluid treatment zone. As shown in Figs. 1 and 2, the sound/vibration sensors taught by Cohen are mounted to the exterior of the water pipe. Nothing in Cohen teaches or suggests mounting a sound/vibration sensor inside the pipes. Thus, even if the combination of Baarman, Wekhof and Cohen were proper, Applicant submits that such a combination would not lead one of skill in the art to the invention claimed in claims 5, 7, 15 and 17. Therefore, withdrawal of the rejections under 35 U.S.C. 103(a) of claims 5, 7, 15 and 17 is requested.

Applicant additionally submits that since neither Barman, Wekhof nor Cohen suggest a sensor disposed within a fluid treatment zone, combining these references with general skill in the art would not lead one of ordinary skill in the art to the invention claimed in claims 6, 8-10, 16 and 18-20. Therefore, withdrawal of the rejections under 35 U.S.C. 103(a) of claims 6, 8-10, 16 and 18-20 is requested.

No fee is believed due for this submission. However, Applicant authorizes the Commissioner to debit any required fee from Deposit Account No. 501593. The Commissioner is further authorized to debit any additional amount required, and to credit any overpayment to the above-noted deposit account.

It is submitted that this application is now in condition for allowance, and action to that end is respectfully requested.

Respectfully submitted,
SCHAIBLE, Uwe D. et al.



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Encl.
Technical Data Sheet - Allegro 3134

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